In the Claims:

1. (Currently Amended) A switching device having an electrically isolating off-state and an electrically conducting on-state, comprising:

two separate electrodes, at least one of which being a reactive metal electrode; and

a solid state electrolyte arranged between the electrodes and in said off-state enabling a flow of electrons and thereby ~~being capable of~~ electrically isolating said electrons ~~electrodes to define said off-state~~, wherein the electrodes and the solid state electrolyte form a redox-system having a minimum turn-on voltage to start a redox-reaction, the redox-reaction resulting in an oxidization of the electrode metal and thereby the generation of metal ions to be released into the solid state electrolyte and therein reduced to form metallic precipitates which upon continued supply of~~, and the~~ metal ions ~~being reduced to~~ increase a metal concentration within the solid state electrolyte and finally form a conductive metallic connection bridging the electrodes to define the on-state, and wherein;

~~wherein an increase of said metal concentration results in a conductive metallic connection bridging the electrodes to define the on-state; and~~

~~wherein the switching device can be irreversibly switched from an electrically isolating off-state into an electrically conducting on-state for use in a configurable interconnect~~

the metallic connection is irreversible, and one or more of the following conditions are met:

the turn-on voltage is unipolar,

the electrodes are reactive metal electrodes, and

only one electrode is a reactive metal electrode and the other electrode is an inert metal electrode in a combination with an adjacent metal layer.

2. (Original) The device according to claim 1, wherein the turn-on voltage is at most approximately 20 V.

3. (Original) The device according to claim 1, wherein the turn-on voltage is at most approximately 1 V.

4. (Original) The device according to claim 1, wherein the reactive metal electrode material is selected from a group consisting of Cu, Ag, Au, Al, Na K, Ca, Mg and Zn.

5. (Currently Amended) The device according to claim 1, wherein one of the electrodes ~~electrons~~ is an inert electrode and wherein metal precipitates within the solid state electrolyte from a metal layer adjacent to the inert electrode to enable the inert electrode to act as a reactive metal electrode.

6. (Original) The device according to claim 5, wherein the inert electrode material is selected from the group consisting of W, Ti, TiN, Ta, TaN, Ir, IrO, doped Si and Pt.

7. (Original) The device according to claim 1, wherein the solid state electrolyte comprises at least one glassy material.

8. (Original) The device according to claim 7, wherein the glassy material comprises at least one chalcogenide glass, such as GeSe, GeS, AgSe, or CuS.

9. (Currently Amended) The device according to claim 1, wherein the solid state electrolyte comprises at least one porous metal oxide, such as WOx or [[A1203]] $A1_20_3$.

10. (Original) The device according to claim 1, wherein the solid state electrolyte is background doped with at least one metal.

11. (Original) The device according to claim 10, wherein the background doping metal is chosen to be the same as the reactive metal electrode material.

12. (Original) The switching device according to claim 1, wherein the electrodes are spaced apart from each other to have a distance in the range of from 10 nm to 250 nm.

13. (Currently Amended) A configurable electrical interconnect comprising at least one switching device having an electrically isolating off-state and an electrically conducting on-state and comprising:

two separate electrodes, at least one of which being a reactive metal electrode; and

a solid state electrolyte arranged between the electrodes and in said off-state enabling a flow of electrons and thereby ~~being capable of~~ electrically isolating said electrons ~~electrodes to define said off-state~~,

wherein the electrodes and the solid state electrolyte form a redox-system having a minimum turn-on voltage to start a redox-reaction, the redox-reaction resulting in an oxidization of the electrode metal and thereby the generation of metal ions ~~to be~~ which are released into the solid state electrolyte, and therein reduced to form metallic precipitates which upon continued supply of ~~the~~ metal ions ~~being reduced to~~ increase a

metal concentration within the solid state electrolyte and finally form a conductive metallic connection bridging the electrodes to define the on-state, and wherein;

~~wherein an increase of the metal concentration results in a conductive metallic connection bridging the electrodes to define the on-state; and~~

~~wherein the switching device can be irreversibly switched from an electrically isolating off-state into an electrically conducting on-state for use in a configurable interconnect~~

said metallic connection is irreversible, and one or more of the following conditions are met:

the turn-on voltage is unipolar,

the electrodes are reactive metal electrodes, and

only one electrode is a reactive metal electrode and the other electrode is an inert metal electrode in combination with an adjacent metal layer.

14. (Currently Amended) A configurable conductor network comprising at least one switching device having an electrically isolating off-state and an electrically conducting on-state and comprising:

two separate electrodes, at least one of which being a reactive metal electrode; and

a solid state electrolyte arranged between the electrodes and in said off-state enabling a flow of electrons and thereby ~~being capable of~~ electrically isolating said electrons ~~electrodes to define said off-state~~,

wherein the electrodes and the solid state electrolyte form a redox-system having a minimum turn-on voltage to start a redox-reaction, the redox-reaction resulting in an

oxidization of the electrode metal and thereby the generation of metal ions [[to be]] which are released into the solid state electrolyte, and therein reduced to form metallic precipitates which upon continued supply of [[the]] metal ions ~~being reduced to~~ increase a metal concentration within the solid state electrolyte and finally form a conductive metallic connection bridging the electrodes to define the on-state, and wherein;

~~wherein an increase of the metal concentration results in a conductive metallic connection bridging the electrodes to define the on-state; and~~

~~wherein the switching device can be irreversibly switched from an electrically isolating off-state into an electrically conducting on-state for use in a configurable interconnect~~

said metallic connection is irreversible, and one or more of the following conditions are met:

the turn-on voltage is unipolar,

those electrodes are reactive metal electrodes, and

only one electrode is a reactive metal electrode and the other electrode is an inert metal electrode in combination with an adjacent metal layer.

15. (Original) The network according to claim 14, further comprising at least one conductive line for connecting at least two of the switching devices.

16. (Currently Amended) A configurable integrated circuit comprising at least one switching device having an electrically isolating off-state and an electrically conducting on-state and comprising:

two separate electrodes, at least one of which being a reactive metal electrode;

and, a solid state electrolyte arranged between the electrodes and in said off-state enabling a flow of electrons and thereby ~~being capable of~~ electrically isolating said electrons ~~electrodes to define said off-state~~;

wherein the electrodes and the solid state electrolyte form a redox-system having a minimum voltage to start a redox-reaction, the redox-reaction resulting in an oxidization of the electrode metal and thereby the generation of metal ions ~~to be~~ which are released into the solid state electrolyte and therein ~~, and the metal ions being~~ reduced to form metallic precipitates which upon continued supply of metal ions increase a metal concentration within the solid state electrolyte and finally form a conductive metallic connection bridging the electrodes to define the on-state, and wherein;

~~wherein an increase of the metal concentration results in a conductive metallic connection bridging the electrodes to define the on-state; and~~

~~wherein the switching device can be irreversibly switched from an electrically isolating off-state into an electrically conducting on-state for use in a configurable interconnect~~

said metallic connection is irreversible, and one or more of the following conditions are met:

the turn-on voltage is unipolar,

those electrodes are reactive metal electrodes, and

only one electrode is a reactive metal electrode and the other electrode is an inert metal electrode in combination with an adjacent metal layer.

17. (Original) The configurable integrated circuit according to claim 16, further comprising at least one metallization having at least one metal line, wherein at least one of said switching device is integrated in said at least one metal line.

18. (Original) The configurable integrated circuit according to claim 16, wherein the metal line material is the same as said reactive metal electrode material.

19. (Original) The configurable integrated circuit according to claims 16, further comprising at least two different metallizations, the metallizations being connected by at least one through via, wherein at least one of said switching devices is integrated in the at least one through via.

20. (Original) The configurable integrated circuit according to claim 19, wherein the through via material is chosen to be the same as said reactive metal electrode material.

21.-22. (Canceled)